

Remarks

Claim 40 has been objected to and claims 44 and 51 have been rejected under 35 U.S.C. 112, second paragraph, for informalities that have been corrected by the amendments above.

Claims 34 and 39-50 have been rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S. 103(a) as obvious over *Tepman* US Patent No. 5,223,112 (“*Tepman*”).

Claims 35-38 have been rejected under 35 U.S. 103(a) as obvious over *Tepman* in view of Takahashi et al. US Patent No. 5,364,219 (“*Takahashi*”).

Claim 51 has been rejected under 35 U.S. 103(a) as obvious over *Tepman* in view of Yamauchi et al. US Patent No. 6,754,554 (“*Yamauchi*”).

The new grounds for rejection moot Applicant’s previous arguments in that *Tepman* discloses the transfer of a shutter plate using a wafer handling mechanism. Applicant has accordingly amended the claims to limit them to the features of the disclosed apparatus and method that provide improvements not taught by *Tepman*.

Specifically, *Tepman* discloses the use of a wafer handling mechanism to transfer a shutter plate that is dimensionally identical to a semiconductor wafer. The shutter plate closes an opening in a holder normally filled by a wafer to prevent coating material from contaminating the structures below the opening when a wafer is being moved, thus avoiding the need to interrupt process settings while exchanging wafers. The shutter handling mechanism that normally moves the shutter plate to and from its closed position is also used to set the shutter plate onto a wafer arm’s end effector when the arm is extended to its normal wafer pick-up position.

With the present invention, annular rings of various types that surround a substrate are presented by only vertical motions of the rings’ support structure so that a transfer arm end effector can be moved under it to pick it up for transfer. The rings are of different geometry than a wafer, being larger and configured to surround the wafer, and additional structure is required on the end effector and the ring mounting structure. The chamber port through which wafers are transferred is oversized to allow for passage of the transfer arm with the annular maintenance item that is larger than the wafer being carried thereby.

More particularly, *Tepman* discloses the use of a wafer handling mechanism without modifications to move a shutter plate to and from its place in a chamber through a standard wafer loading port for exchange or maintenance. This is made possible in *Tepman* by the fact that the shutter plate is constrained to have the same size and shape of a wafer that would ordinarily be handled by the wafer transfer mechanism of the system. Additionally, the shutter, which is the only chamber component that the *Tepman* system is able to handle, is supported on its own mounting system that swings the shutter into and out of position over the wafer support to and from a retracted position to the side of the support. This mechanism sets the shutter plate onto the wafer transfer arm's end effector when the end effector is moved into its normal wafer pick-up position over the substrate support. The shutter plate in *Tepman* is in all relevant respects a wafer, and is transferred to and from the chamber as if it were a wafer.

Applicant claims the transfer of a non-wafer shaped chamber component, namely annular maintenance items that are larger than, and configured to surround, a wafer on a wafer support. The annular maintenance item is supported on mounting structure that lifts and lowers the annular maintenance to and from a pick-up position from and to a processing position. The annular maintenance item is particularly configured for pick-up by a wafer transfer arm which, in turn, is particularly configured to pick-up the annular maintenance item in addition to being configured to pick up wafers. A port that is larger than the wafer is provided in the chamber to accommodate the transfer of these larger ring-shaped items for maintenance to replace the standard port described in *Tepman*.

It is submitted that the claims, as amended, are patentable over the cited references for the reasons discussed above. Accordingly, allowance of this application is respectfully requested.

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Applicant does not believe that any fee is due in connection with this Amendment. However, if any charges or credits are necessary to complete this communication, please apply them to Deposit Account No. 23-3000.

Respectfully submitted,

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